

SEISMOLOGICAL REPORTS FOR JANUARY, 1921.

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[Weather Bureau, Washington, D. C., March 3, 1921.]

TABLE 1.—Noninstrumental earthquake reports, January, 1921.

Day.	Approximate time, Greenwich civil.	Station.	Approximate latitude.	Approximate longitude.	Intensity Rossi-Forl.	Number of shocks.	Duration.	Sounds.	Remarks.	Observer.
1921.	H. m.	CALIFORNIA.	° /	° /			Sec.			
Jan. 13	10 30	Willows.....	34 03	118 15	5	1	3	None.....	Felt by many.....	J. T. McPherson.
14	12 09	Lone Pine.....	36 37	118 01	4	1		do.....	Felt by several.....	G. F. Marsh.
13	13 00	Lone Pine.....	36 37	118 01	4	1		do.....	do.....	Do.
13	13 50	Lone Pine.....	36 37	118 01	5	1		do.....	Felt by many.....	Do.
20	19 46	Calexico.....	32 41	115 30	4	1	4	Rumbling.....	do.....	W. S. Pratt.
25	2 15	Aguanga.....	33 30	117 00	2	1	2	Loud.....	Felt by two.....	A. J. Berg.
25	21 24	Calexico.....	32 41	115 30	3	5	1	Faint.....	Felt by many.....	W. S. Pratt.
		KENTUCKY.								
9	21 49	Hickman.....	36 34	89 12	2	1	3	None.....	Felt by several.....	R. B. Coffee.
		MISSOURI.								
9	21 40	New Madrid.....	36 35	89 32		1	Few.	do.....	Felt by many.....	Miss J. G. Smith.
		NEW JERSEY.								
26	23 40	Atsion.....	39 45	74 45		1		Rumbling.....	Similar to explosion.....	I. M. Armstrong.
	23 45	Burlington.....	40 05	74 50		1		do.....	Felt by many.....	D. S. B. McCoy.
		Harlem Heights.....			4	1	60	do.....	do.....	G. N. Abel.
	23 40	Moorestown.....	75 00	39 55	4-5		10-20	do.....	do.....	F. E. Stokes.
		Palmyra.....	75 00	40 00	4	2	3-5	None.....	Felt by several.....	A. L. Urban, jr.
		Riverside.....	74 56	40 05	5	2	1	Rumbling.....	Felt by many.....	A. Thielmann.
		Riverton.....	75 00	40 00	5	1	30	do.....	do.....	R. E. Mattis.
		Riverton.....	75 00	40 00	4-5	1	5	do.....	do.....	G. T. Dold.
		TENNESSEE.								
9	20 30 ca.	Tiptonville.....	36 24	89 30	4	1	60	None.....	do.....	Lucille M. Stanley.

LATE REPORTS.

1920.										
Dec. 17	9 55	Brigham, Utah.....	41 30	112 00	4	1		Rumbling.....	Felt by several.....	J. N. Anderson.
	10 05	Brigham, Utah.....	41 30	112 00	4	1		do.....	do.....	Do.
29	9 59	Willows, Calif.....	34 03	118 15	5	2	3 ca.	do.....	Felt to east and north also.....	F. J. McPherson.

TABLE 2.—Instrumental seismological reports, January, 1921.

[Time used: Mean Greenwich, midnight to midnight. Nomenclature: International.]

Date.	Character.	Phase.	Time.	Period T.	Amplitude.		Distance.	Remarks.
					A _m	A _N		
CALIFORNIA. Theosophical University, Point Loma.								
1921.			H. m. s.	Sec.	μ	μ	Km.	
Jan. 8					200	200		Tremors.
9					100	100		
16					100	100		
20					100	100		
30					200	200		
DISTRICT OF COLUMBIA. Georgetown University, Washington.								
1921.			H. m. s.	Sec.	μ	μ	Km.	
Jan. 2					7 29 43			Not discernible on NS.
					7 45 —			
8					6 40 46			Heavy micros; S _N very doubtful.
					6 40 46			
					6 46 44			
					6 46 17			
					6 50 24			
					6 50 24			
					7 10 —			
9					13 04 21			Sheets off at 13h. 4m.; quake still on; heavy micros.
					13 04 17			
					13 11 42			
					13 11 41			
					13 18 24			
15					15 20 13			Heavy micros.
					15 35 —			
20					21 10 44			
					21 10 42			
					21 20 18	22		
					21 21 12	21		
					21 30 —			
DISTRICT OF COLUMBIA. U. S. Weather Bureau, Washington.								
1921.			H. m. s.	Sec.	μ	μ	Km.	
Jan. 2					7 29 40			
					7 34 —			
8					6 41 42		3,400	L not defined.
					6 46 54			
					7 00 ca.			
9					13 04 16			Lost in changing sheets.
								L not discernible.
					13 35 ca.			
20					21 08 09		3,500	
					21 13 23			
					21 20 45			
					21 30 ca.			
HAWAII. U. S. C. & G. S. Magnetic Observatory, Honolulu.								
1921.			H. m. s.	Sec.	μ	μ	Km.	
Jan. 9					13 20 42			
					13 36 36	21		
					13 43 42		* 200	
					13 47 —			
					14 08 —			
					15 50 —			
14					19 22 00			
					19 27 00		* 100	
					19 30 —			

* Trace amplitude.

TABLE 2.—Instrumental seismological reports, January, 1921—Continued.

HAWAII. U. S. C. & G. S. Magnetic Observatory, Honolulu—Con.

1921.			H. m. s.	Sec.	μ	μ	Km.
Jan. 20	e	1 37 48					
	e	1 41 18					
	eL	1 46 30					
	M	1 53 30			* 100		
	C	1 56 —					
	F	2 11 —					
20	e	21 24 36					
	L	21 37 42	20				
	M	21 43 42			* 500		
	C	21 48 —					
	F	22 18 —					

ILLINOIS. U. S. Weather Bureau, Chicago.

1921.			H. m. s.	Sec.	μ	μ	Km.	
Jan. 6	P?	12 30 10						
	S?	12 40 10						
	L	12 58 30	25					
	L	13 02 —	20					
	L	13 08 —	18					
	F	13 40 ca.						
7	L	2 09 00	18					Heavy micros; other phases lost.
	F	2 25 —						
7	eL	4 08 —	18					Do.
	F	5 ca.						
8	P	6 41 36					3,000	
	S	6 46 18						
	L?	6 48 48						
	F	7 15 ca.						
9	P	13 04 40					6,200	
	S	13 12 28						
	L	13 22 20						
	L	13 22 49	15					Merged in succeeding quake. Micros.
	F							
9	P	14 31 05?						
	S?	14 39 00						
	eL	14 46 20	18					
	L	14 49 50	18					
	F	15 40 ca.						
20	P	21 11 01					5,200	
	S	21 17 54						
	L?	21 25 40						
	F	22 20 ca.						

NEW YORK. Fordham University, New York.

1921.			H. m. s.	Sec.	μ	μ	Km.	
Jan. 26	em	10 52 41						Irregular quavers continue throughout the day.
27	e	12 33 —						Intermittent wavelets similar to those of the 26th, but not so prolonged.

CANAL ZONE. Panama Canal, Balboa Heights.

1921.			H. m. s.	Sec.	μ	μ	Km.	
Jan. 9	P ₁₀₀	13 00 12					2,400	Direction NW.
	P ₁₀₀	13 00 08						
	S ₁₀₀	13 04 24						
	S ₁₀₀	13 04 16						
	L ₁₀₀	13 07 11						
	L ₁₀₀	13 07 00						
	M ₁₀₀	13 04 30			*500			
	M ₁₀₀	13 04 40				*800		
	F ₁₀₀	13 24 00						
	F ₁₀₀	13 26 00						
20	P ₁₀₀	21 03 46					425	Do.
	P ₁₀₀	21 03 44						
	S ₁₀₀	21 04 32						
	S ₁₀₀	21 04 32						
	L ₁₀₀	21 05 04						
	M ₁₀₀	21 05 13			*6,000			
	M ₁₀₀	21 05 52				*6,000		
	F ₁₀₀	21 20 00						
	F ₁₀₀	21 21 00						
9	P ₂₅	13 00 13					2,400	Slight on EW.
	S ₂₅	13 01 25						
	L ₂₅	13 06 56						
	M ₂₅	13 04 54				*800		
	F ₂₅	13 23 30						

* Trace amplitude.

CANAL ZONE. Panama Canal, Balboa Heights—Continued.

1921.			H. m. s.	Sec.	μ	μ	Km.
Jan. 20	P ₄₂₅	21 03 44					425
	P ₄₂₅	21 03 46					
	S ₄₂₅	21 04 29					
	S ₄₂₅	21 04 31					
	L ₄₂₅	21 05 00					
	L ₄₂₅	21 04 49					
	M ₄₂₅	21 05 05			*3,500		
	M ₄₂₅	21 06 02				*3,000	
	F ₄₂₅	21 19 00					
	F ₄₂₅	21 19 00					

CANADA. Dominion Observatory, Ottawa.

1921.			H. m. s.	Sec.	μ	μ	Km.	
Jan. 2	e?	7 29 00						Very faintly marked.
	em?	7 39 00						Barely discernible.
	em?	7 45 20						
	ol?	7 51 15						
	F	8 10 ca.						
7	eL	4 09 30	26					Small amplitude L waves: earlier phases lost entirely in micros. Lost in micros.
	L	4 31 —	21?					
	L	4 38 30	20					
	F	4 46 —						
8	O	6 35 23					3,010	
	P	6 42 35						
	PR1?	6 43 42						
	PR2?	6 43 52						
	S	6 48 17						
	eL	6 51 27						
	L	6 53 —						
	F	7 05 ca.						
9	O	12 55 03					6,480	
	P	13 05 02						
	PR	13 07 34						
	PR	13 08 25						
	S	13 13 04						
	SR2?	13 19 11						
	eL	13 23 40	12?					
	L	13 31 —	20					
	L	13 35 —	16					
	F	13 45 ca.						
9	L	14 55 36	20					May possibly be part of preceding quake.
	L	15 03 30						
	L	15 17 —						
	F	15 20 —						
19	em	15 19 11						NS lost in micros.
	L	15 44 30	20					
	L	15 53 —	16					
	F	16 02 ca.						
20	O	21 06 34					2,600	
	P	21 11 52						
	S	21 16 05						
	eL	21 18 40	20					
	L	21 22 40	16					
	L	21 32 —						
	F	21 50 —						

CANADA. Dominion Meteorological Service, Victoria.

1921.			H. m. s.	Sec.	μ	μ	Km.	
Jan. 1	L	8 22 49						
	M	8 26 16			*200			
	F	8 31 11						
2	P?	7 06 08						
	S	7 13 01						
	L	7 23 21						
	M	7 36 08			*200		5,190	
	F	7 56 17						
3	P?	21 40 21						P may be L phase.
	M	21 44 06			*100			
	F	21 48 31						
6	M	12 48 41			*300			P, S, and L lost when city lights out.
	F	13 21 09						
7	L?	1 24 39						
	M	1 47 16			*200			
7	P?	3 30 04						
	L	3 39 51						
	M	3 58 35			*400			
	F	5 06 58						
9	L	13 16 34						
	M	13 38 19			*500			
	F	14 48 01						
15	L?	13 03 23						
	M	13 07 49			*500			
	F	13 15 11						No further returns since 15th.

* Trace amplitude.

TABLE 2.—Instrumental seismological reports, January, 1921—Contd.

CANADA. Dominion Meteorological Service, Toronto.

1921. Jan.			H. m. s.	Sec.	μ	μ	Km.	
1								Isolated micros in early morning.
2		e.	7 31 42					
		L.	7 55 18					
		L.	8 00 42					
		L.	8 03 36					
		M.	8 04 18		*200			
		F.	8 06 54					
3		eL.	21 44 24					
		M.	21 45 06		*200			
		F.	21 47 12					
6		L.	13 06 30					
		eL.	13 09 42					
		eL.	13 15 54					
		M.	13 17 12		*300			
		F.	14 15 36					
7		L.	1 59 24					
		eL.	2 06 18					Small micros going on all morning.
		M.	2 09 18		*300			
		eL.	2 15 36					
		F.	2 26 18					
7		L.	3 37 30		*100			
7		L.	4 11 30					
		M.	4 17 06		*300			
		eL.	4 20 48					
		eL.	4 40 12					
		M.	4 42 12		*300			
		eL.	4 51 06					
		F.	5 03 51					
9		iS.	13 13 12					S preceded by micros.
		e.	13 20 00					
		eL.	13 25 18					
		eL.	13 27 30					
		M.	13 30 00		*400			
		eL.	13 39 24					
		F.	13 58 06					
9		eL.	14 55 06					Micros 14:21:54. 14:35:00.
		M.	14 58 24		*500			Micros.
		F.						Small micros going on.
15		L.	13 10 18			*100		S may be P phase.
		F.	13 14 54					
16		S.	16 11 30					
		eL.	16 16 18					
		M.	16 17 12		*200			
		F.	16 20 36					May not be seismic.
19		iL.	15 30 36					
		M.	15 32 06		*200			
		eL.	15 40 54					
		eL.	15 51 30					Micros.
		F.						
20		P.	21 06 12					
		S.	21 13 00					
		e.	21 18 06					
		eL.	21 19 42					
		eL.	21 22 12					
		M.	21 24 06		*800			
		F.	21 52 54					
25		eL.	22 55 30					
		eL.	22 57 06					
		M.	22 58 06		*300			
		F.						Do.
26		eL.	12 38 18					Heavy micros going on from 11 hrs.
		M.	12 38 48		*300			
		F.						
31								Heavy micros began at 0h. 52m. 06s., continuing all day.

* Trace amplitude.

No earthquakes were recorded at the following stations during January, 1921:

ALABAMA. Spring Hill College, Mobile.
 COLORADO. Sacred Heart College, Denver.
 MISSOURI. St. Louis University, St. Louis.
 VERMONT. U. S. Weather Bureau, Northfield.
 MARYLAND. U. S. C. & G. S. Magnetic Observatory, Cheltenham.
 PORTO RICO. U. S. C. & G. S. Magnetic Observatory, Vieques.
 ARIZONA. U. S. C. & G. S. Magnetic Observatory, Tucson.
 ALASKA. U. S. C. & G. S. Magnetic Observatory, Sitka.

Reports for January, 1921, have not been received from the following stations:

MASSACHUSETTS. Harvard University, Cambridge.
 NEW YORK. Cornell University, Ithaca.

SEISMOLOGICAL DISPATCHES.

[Collected by seismographic station, Georgetown University, Washington, D. C.]

Mendoza, Argentina, January 5, 1921.—The entire region affected by the disastrous earthquake of December 17 was again visited by an unusually strong shock at 3 o'clock, Monday afternoon (January 3). This one, which was of five seconds' duration, was the worst felt since December, and it leveled the few walls left standing in the destroyed towns of La Valle and Castro de Araujo, near Mendoza. Reports state that the shock was felt in Santiago. (A.)

Paris, January 7, 1921.—Dispatches to the Albanian authorities indicate that the recent earthquake disaster in the Elbassan district was for more serious than was shown by the earlier reports. The shocks were especially heavy in the area between Tepelini and Elbassan. The latter city is almost completely razed. (A.)

Los Angeles, January 8, 1921.—The towns of Covina, Glandor, and Azusa, in the San Gabriele Valley, 20 miles east of here, were rocked to-night by what was declared to be a series of explosions, according to reports received here. Every house in the towns were shaken and windows broken. The first shock was felt at about 9:30 and was followed by two more within half an hour. Each was accompanied by a loud report. Otherwise the tremblings resembled an earthquake. (A.)

Willows, Calif., January 13, 1921.—A sharp earthquake, lasting about three seconds, was felt here at an early hour to-day. Sleepers were aroused, but no damaged was reported. A similar shock was felt here on December 29 last. (A.)

Rome, Italy, January 14, 1921.—Two earth tremors occurred last night in Faenza, in north central Italy between Bologna and Ravenna. First tremor was at 7 p. m. and the second at 9:30 p. m. There is no mention of damage in the report. (A.)

Santiago, Chili, January 17, 1921.—A violent earthquake was felt here at 9:30 o'clock this Monday (17th) evening. Hundreds of persons fled to the streets in alarm. No serious damage reported. (A.)

Devonshire Dock, Bermuda, January 18, 1921.—Slight tremors were felt here on January 18 at 16 minutes past 6 o'clock p. m. (S. C.)

Glen Falls, N. Y., January 19, 1921.—The first shocks were felt at Corinth at 5 o'clock a. m., and two hours later they were felt at Lake George. Houses were shaken to the rattling of dishes. (A.)

Glen Falls, N. Y., January 19, 1921.—What are believed by residents to have been earthquake shocks were felt to-day for three minutes at Corinth and Lake George. (A.)

Philadelphia, Pa., January 26.—An earth tremor or an explosion of great violence was felt here about 6:45 o'clock. (A.)

Glen Falls, N. Y., January 27.—Villages throughout this section were shaken this morning, for the third time in less than two weeks, by what is believed to have been an earthquake. The vibrations were reported from Lake George, Hudson Falls, Fort Edward, Greenwich, and other places. (A.)

F. TONDORF, S. J., Director.

A.—Associated Press. S. C.—special cable.